ACCESSION #: 9609300157

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Indian Point Unit No. 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000247

TITLE: Reactor Trip due to de-energization of 6.9 kV breaker

logic relay

EVENT DATE: 08/19/96 LER #: 96-015-00 REPORT DATE: 09/18/96

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: James Maylath, Senior Engineer TELEPHONE: (914) 734-5356

COMPONENT FAILURE DESCRIPTION:

CAUSE: X SYSTEM: JC COMPONENT: RLY MANUFACTURER: W120

REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On August 19, 1996, with the unit operating at 100% power, a reactor trip occurred with all control rods fully inserting. This initiated a turbine trip, and the generator tripped 30 seconds following the reactor trip as designed. The cause of the reactor trip was traced to the de-energization of a logic relay which monitors the 6.9 kV breaker for Reactor Coolant Pump 24. There was no condition that would have required the breaker to open during this event, and the breaker did not open. A high resistance in a relay contact in the coil circuit of the logic relay was identified. It was determined that the most probable cause of the trip was an anomaly associated with the de-energization of this logic relay. All safety related equipment performed as expected, and the reactor was safely brought to

hot shutdown conditions.

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PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Reactor trip due to de-energization of 6.9 kV breaker logic relay

EVENT DATE:

August 19, 1996

REPORT DUE DATE:

September 18,1996

REFERENCES:

Condition Identification and Tracking System (CITRS) No. 96-E01937

PAST SIMILAR OCCURRENCE:

LER 86-037, 87-009 and 92-011

DESCRIPTION OF OCCURRENCE:

On August 19, 1996 at 2041 hours, with the unit operating at 100% power, the 6.9 kV breaker logic relay for Reactor Coolant Pump (RCP) 24 de-energized. This initiated a reactor trip as designed. The turbine tripped following the reactor trip, and 30 seconds later, the generator tripped as designed. All control rods fully inserted into the core with the reactor trip as designed. RCP 24 continued to run during this event since its 6.9 kV supply breaker remained closed. There was no condition that would have required the breaker to open during this event. All

safety related equipment performed as expected, and the reactor was safely brought to hot shutdown conditions.

ANALYSIS OF OCCURRENCE:

This report is being made because an actuation of the Reactor Protection System (RPS) occurred on August 19, 1996. This actuation is reportable under 10 CFR 50.73(a)(2)(iv). Following the reactor trip, all safety related equipment functioned as designed, and the reactor was safely brought to hot shutdown conditions. There were no injuries to personnel or damage to equipment as a result of this event.

CAUSE OF OCCURRENCE:

It was determined that de-energization of the logic relay for RCP 24 supply breaker initiated the reactor trip. This logic,relay is designed to initiate a reactor trip if the 6.9 kV supply breaker to RCP 24 opens. This design provides for protection of the reactor from loss of reactor coolant flow and is typical for each of the four RCPs. Throughout this event, there was no condition that would have required the breaker to open. All RCPs ran as required, and there was no unexpected loss of reactor coolant flow. Following the event, the logic relay for the RCP 24 breaker and associated circuitry, including the breaker itself, were tested. A higher than normal resistance in a test relay contact in the coil circuit of the logic relay was found. Although the logic relay should have remained energized based on the resistance that was observed

during the testing, an intermittent resistance across the test relay contacts sufficient to cause the logic relay to drop out (de-energize) could have occurred. The observed high resistance is indication that some anomaly occurred with the test relay contacts. Since the RCP 24 breaker and all other components of the logic relay circuitry functioned properly during subsequent tests, an intermittent resistance across the test relay contact is the most probable cause of the August 19, 1996 reactor trip. The trip signal cleared in about 676 milliseconds.

CORRECTIVE ACTION:

When the reactor trip occurred, the control room operators took immediate actions in accordance with emergency operating procedures. The reactor was safely brought to hot shutdown conditions.

Subsequent investigation and testing was done on the logic relay, the test relay, the RCP 24 breaker (including the breaker auxiliary contacts) and associated circuits. The only anomaly found was the high resistance across the

test relay contacts. This resistance produced a voltage drop of about 0.10 - 0.15V during the tests. This voltage drop was about 10 times that found in other relays which were tested. The logic relay, a Westinghouse type BFD 125VDC relay, was tested for dropout voltage. The measured dropout voltage was 38 V. This was much less than what the measured voltage drop across the test relay would produce at the logic relay.

Wiring in the logic relay circuit was inspected, and attempts were made to fabricate a resistance high enough to drop out the logic relay by physically moving connections where they were visible. The dropout of the logic relay could not be repeated by this method. No loose connections or any other anomalies were found in the logic relay circuit. Hence, since there was a measured deviation in resistance across the test relay contacts, the most probable cause for the dropout of the logic relay was an intermittent resistance across the test relay contacts sufficient to cause the logic relay to drop out. The test relay was replaced as a precautionary measure.

The relay with the high contact resistance was sent to an independent laboratory for more extensive testing. High contact resistances for these relays have occurred in the past, although infrequently. These high resistances were previously attributed to oxide formation on the relay contacts or worn contact springs. These occurrences were either detected by routine surveillance tests or calibrations, and a preventive maintenance program for these relays was previously established. If necessary, this program will be re-evaluated following receipt of laboratory analysis on the test relay.

Stephen E. Quinn

Vice President September 18, 1996

Consolidated Edison Company of New York, Re: Indian Point Unit No. 2

Inc.

Indian Point Station Docket No. 50-247

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The attached Licensee Event Report 96-15-00 is hereby submitted in

accordance with the requirements of 10 CFR 50.73.

Very truly yours,

Attachment

cc: Mr. Thomas T. Martin

Regional Administrator - Region I

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